

Using mixed methods to understand the mechanisms and prevalence of creative engagement in drama-based instruction



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ABSTRACT

While arts integration is an increasing area of inquiry in educational research, few studies collect and analyze data on the creative engagement of adolescents in real-time. This mixed methods study employed a convergent design to transform one set of videos depicting drama-based instructional classes into a qualitative and quantitative data set. Each data set was analyzed separately and the results were compared and merged. The qualitative data analysis revealed two cross-cutting themes: autonomous gesture as active part of learning and reciprocity and shared vulnerability in student teamwork. After the video data were analyzed qualitatively for these general themes, the classes of drama-based instruction (science, health, history and an instructional class) were compared more precisely. The video data was coded quantitatively using a Likert scale (0–3) to indicate the prevalence of creative engagement in the areas of autonomy, belonging, creative resources, and competency. The quantitative data analysis revealed differences across the classes: observed expressions of autonomy were statistically higher in the health class, belonging and creative resources were not different across classes at a statistically significant level, but competency increased progressively from Grade 6 to Grade 10. The merging of the data emphasized the reciprocating features of individual enactment and group-level reinforcement during drama-based instruction and alternate explanations for the observed differences across the instructional classes.

1. Introduction

The growing evidence of declining engagement in learning across adolescence (Anderson et al., 2019a,b) coincides with a decline in learning opportunities in the arts (Government Accountability Office, 2009). In particular, there are few observable opportunities for creativity across content areas (Pitts et al., 2017), and a narrowing of curriculum due to high stakes accountability (Darling-Hammond, 2007; Orfield, 2014)—especially for the most marginalized schools and students. These discouraging trends demand innovative teaching methods that draw upon the behavioral, cognitive, and emotional engagement inherent in the creative process (Amabile, 1983, 2017), including through drama-based pedagogy.

To address these trends, we posit that four psychological needs—a sense of autonomy, relatedness, belonging, competency (Fredericks, Blumenfeld and Paris, 2004), and agency (Bandura, 2018; Reeve, 2013) are fundamental to creativity in adolescent learning. From self-determination theory (Ryan and Deci, 2000) and social-cognitive theory (Bandura, 2018) perspectives, a student's engagement in any

type of learning begins with the fulfillment of those fundamental needs. With those needs met, engagement will take four different potential forms— emotional, cognitive, behavioral, and agentic (Reeve, 2013). The learner's desire to making meaning is both a fundamental need and form of engagement, especially when considered from an embodied and sociocultural learning perspective (Anderson, 2018; Osgood-Campbell, 2018).

The process of making meaning from academic content and skills draws on the diverse creative resources that learners carry and share with one another in a classroom are acts of *creative engagement*. Framed by that lens, the documented benefits of arts engagement (Peppler and Davis, 2010; Winner and Hetland, 2008), especially socially active and embodied experiences, such as with drama (Lee et al., 2015), suggest that integrating artistic processes should establish conditions where a learner's fundamental needs and forms of engagement can flourish. This study explores how the integration of a foundational drama-based practice at different secondary school grade levels and in different content areas sets the conditions for creative engagement.

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1.1. Designing arts integration for creative engagement

Arts integration is not a new idea. During the early debates of how curriculum should be organized, the philosopher John Dewey argued for the interdependence of knowledge across domains and the relationship between that knowledge and the human drive for intellectual curiosity (Kliebard, 2004). For decades, different forms of curriculum integration, such as project-based learning, formed to counteract the challenges of subject-specific curriculum isolation (Burnaford et al., 2007). Arts integration has been defined “as an approach to teaching in which students construct and demonstrate understanding through an art form a creative process, which connects an art form and another subject area and meets evolving objectives in both” (Silverstein and Layne, 2010, p. 1). Given this broad definition of arts integration, there are various approaches to combining an art form, such as theatre, with a core academic subject, such as science. Within these approaches, teachers and students engage in an arts integrated learning process to various extents, ranging from superficial ‘edutainment’ to completely immersed arts learning (Katz-Buonincontro, 2015) that creates opportunities for multiple modes of creative engagement—embodied, visual, emotive, verbal, and written.

Though often implicit, documented approaches to designing arts integration has notably lacked an explicit focus on psychological theory of student engagement and the creative learning process (Burnaford et al., 2007). Research on the effectiveness of arts integration techniques in different artistic media (see Lee et al., 2015; Robinson, 2013) has tested effects on social-emotional outcomes related to engagement, but the explicit design with those factors in mind has been less evident. For instance, one study tested the effectiveness of professional development in drama-based instruction on student engagement; yet, the study did not appear to specifically prepare teachers to set conditions to ensure the fundamental needs for engagement were met (Cawthon et al., 2011). Given the theoretical alignment between creative learning through the arts and the psychological and cognitive needs of learners (Anderson, 2018) constructing an analytic approach to study creative engagement in action is an important step and a central goal of this mixed method study.

Specifically, this new approach should identify, contrast, and compare aspects of creative engagement in arts integration across the full range of gestural, embodied, verbal, and visual communication and manipulation that occurs (Dawson and Lee, 2018). For future research and pedagogical development in arts integration, it will be critical to specify how to meet the psychological needs of learners to set the conditions for successful and sustained behavioral, cognitive, emotional, and agentic engagement. Understanding how this engagement looks in action at different points in adolescence, and what specific instructional moves set and reinforce those conditions can support both researchers and practitioners.

This study pursues the question of parsing out qualities of multi-modal arts integration for the specific developmental needs of early adolescents, using an inventory of arts integrated curricular examples generated between middle school educators and teaching artist integration specialists. We employed mixed methods to investigate how teachers and students engaged their creativity while learning and practicing tableaux vivants. In tableaux vivants, or tableau(x), participants “envision and physically enact a scene, incident, or concept remaining silent and motionless, as if in a picture” (Anderson and Beard, 2018, p. 272). As a live performance for peers, actors can add transitions between a series of frozen, picture-like scenes, and include brief verbal descriptions, if portraying abstract ideas. If desired, students or teachers can document the scenes by photograph to capture stills of the performance. In this study, the use of tableaux had different purposes for different classrooms contexts, where it was implemented, ranging from expressing meaning about scientific concepts to portraying the health and societal effects of disease. The technique was used by teachers to complement traditional forms of classroom learning through lecture and reading and discussing material. In this paper, we review literature related to arts integration and creative development in the adolescent context and learning

conditions for creative engagement. Then, we describe our study and quantitative and qualitative results analyzing videos of theatre-based instruction in 21 distinct class periods.

1.2. Developmental context of creative engagement in adolescence

The middle school years initiate a steep drop in student engagement in school that eventually leads to dropping out of school for many students (Janosz et al., 2008). Additionally, the early adolescent period represents key developments in creative potential (Barbot et al., 2016; Kleibecker et al., 2016) alongside a heightened importance of the social and emotional dimensions of learning (Armstrong, 2016; Dahl et al., 2018). And yet, the structure of education during this stage focuses most on academic competition, offering fewer opportunities to connect creatively and emotionally with content and with others (Juvonen, Le, Kaganoff, Augustine and Constant, 2004).

Young adolescents seek out identities within their social context, yearn for independence in their learning, develop new metacognitive capacity for self-awareness, and begin to conceptualize their future selves. Demonstrating the power of self-exploration and self-expression, even just taking one art class in high school can decrease the risk of dropping out by 30% (Thomas et al., 2015). Creative development through the arts and other creative pursuits can support healthy identity formation in adolescence as a means of expression, inclusion, and social distinction (Barbot and Heuser, 2017). Recent developmental science on early adolescence supports decades of research on self-determination theory and student engagement, suggesting that the fundamental needs for autonomy, belonging, and competency are key to learning (Dahl et al., 2018). Moreover, the creative process in learning provides opportunities for students to make individual meaning and express their unique perspectives within a community of learners (Beghetto, 2016). Those perspectives converge in the concept of creative engagement in learning as an embodied, emotional, and cognitive process to make and share meaning in the sociocultural context of a classroom of diverse learners (Anonymous, 2018b). Unfortunately, learners in adolescence face a shortage in opportunities for creative engagement in school (Pitts et al., 2017).

Creative thought and behavior is a higher order cognitive process (Durwin and Reese-Weber, 2018) focused on novel and meaningful ideas and expression. The creative process involves the whole body as the medium of the mind (Anderson, 2018), using the full capacity of all the senses not just the neural synapses firing off in the brain. In addition to idea generation, the creative resources that young people employ in creative learning include openness to new experiences, tolerance for ambiguity, and willingness to be different and take risks that may contrast with norms and expectations of others (Beghetto, 2016). Opportunities for creative engagement are important for the well-rounded preparedness of young people. Through a framework for creative engagement, educators, teaching artists, and curriculum designers can build creative, arts integrated classroom experiences for adolescent students with a shared understanding of the purpose and process of quality learning meaningful to each student. As such, creative engagement provides a flexible set of design principles and indicators to use in the classroom context, but more research is needed to understand these indicators in action.

Just as researchers have conceptualized student engagement as the fulfillment of a learner's fundamental needs for autonomy, belonging, and competency (Fredericks, Blumenfeld and Paris, 2004), recent definitions of creativity have expanded to include the everyday creativity of personal insights, or “mini-c creativity”, as well as the insights that can shape the learning and direction of others, or “little-c creativity” (Kaufman and Beghetto, 2009). In this way, educators must cultivate conditions for learners to have the *autonomy* to feel and think for themselves using the whole body to shape meaning (Anderson et al., 2019b). Indeed, how a learner feels determines how the learner will think and draw on that thinking in the future (Immordino-yang, 2010). Learners must feel a

sense of *belonging* to take risks, express novel meaning and interpretations, and connect with and learn from others. Through developing *competency*, learners form the confidence, skills, and habits of mind to be flexible, resilient, and disciplined. Creative engagement harnesses the myriad *creative resources*—behaviors, thinking, and attitude (Lubart et al., 2013)—that each individual carries to a learning task. In the following sections, we describe how the framework for creative engagement takes shape into observable indicators to identify in drama-based integrated learning across four contexts.

1.3. Present study

The present study is driven by research questions to understand how one data set of videos coded qualitatively and quantitatively provide generative insight into the multi-modal nature of creative engagement in adolescent learners.

1. How are the mechanisms of creative engagement enacted and reinforced (qualitative analysis of videos)?
2. Which creative engagement dimension (creative resources, autonomy, belonging, or competency) is most prevalent across four distinct classes of integrating a process drama technique (quantitative analysis of videos)?
 - a. How do the classes (high school health, middle school social studies and middle school science) differ in terms of level of creative engagement?
 - b. At a descriptive level, what were the most salient indicators across classes for each component?
3. How do the quantitative and qualitative results compare to each other (mixed methods analysis)?

2. Method

2.1. Convergent mixed methods design

Mixed methods was selected as the methodological paradigm to analyze and interpret the video data in terms of accounting for two complementary aspects (Morse, 1991): (a) the mechanisms or process of creative engagement (qualitative) as well as the (b) salience/prevalence of the intensity and the frequency of the creative engagement indicators occurring across drama-based classroom instruction (quantitative). Within the various mixed methods approaches, we chose the convergence data-transformation variant (Creswell and Plano Clark, 2018, pp. 73), meaning that the qualitative data is first collected and analyzed, and then quantified. As such, the paper is organized in two methods and results sections, one for the qualitative analysis and one for the quantitative analysis. This convergent mixed methods approach follows the order in which data were analyzed (Creswell and Plano Clark, 2018). In order to maximize the potential for integration, we wanted to make sure the qualitative results were equally as important and robust as the quantitative data, sometimes referred to as having *equivalent status* (Creamer, 2018). The qualitative transcription, coding and analysis of the videos occurred first. Then, we analyzed the data further quantitatively to get a more precise, theoretical understanding of how creative engagement differed across the classes of drama-based classroom instruction. Finally, we integrated the data by comparing the sets to engender a more robust understanding of the mechanisms and salience/prevalence of creative engagement than a mono-method study or a multi-method study in which data are collected in phases and then summarized, but not integrated.

2.2. Study setting

This study draws on the arts integration curricular materials from a large grant-funded arts integration program that was implemented at four large Grades 6–8 middle schools and one small 7–12 charter school.

In that program, content area teachers collaboratively designed arts integration solutions with teaching artist integration specialists in response to opportunities in the curricular scope and sequence and student needs and assets. As other research has illustrated (see Anderson and Pitts, 2017; Anderson et al., 2019a,b), team members worked in each context to build on the interests, needs, and opportunities to integrate the arts and to integrate different artistic disciplines.

Naturally, the resulting arts integration design solutions capitalized on the specific qualities of each artistic discipline. One school was a traditional urban middle school serving $n = 560$ students in Grades 6–8, with 84% of students eligible for free- and reduced-meals. The other middle school was in a rural setting on the fringe of an urban center, serving 491 students in Grades 5–8, with 69% of students eligible for free- and reduced meals. The third school was a charter school serving 119 students in Grades 7–12, with 62% eligible for free and reduced meals. This current study aims to investigate how that inductive and responsive arts integration design process represented the research-based framework of creative engagement, naturally. The benefit of crossing grade levels is to provide holistic arts-integration to all middle school students.

2.3. Qualitative analysis

The objective of the qualitative analysis was to examine the mechanisms of how creative engagement conditions were enacted and reinforced in tableaux.

2.3.1. Video sample

The 37 discrete video recordings of discrete small-group presentations by students included in this study documented in the arts integration model development project during 21 different class periods. Teachers voluntarily engaged in training to learn how to integrate drama-based strategies into their specific content areas—Anderson and Beard (2018) documented three teachers' experience in those trainings and in their classroom implementation. To generate and process classroom-based video data, a series of steps were followed. First, three teachers integrated tableaux into their classroom instruction in three different content areas and grade levels. Second, a videographer recorded video of their students engaging in and presenting tableaux vivants in their learning toward the end of their unit. During that video recording, a random set of student groups were recorded. An additional set of videos created to support teacher implementation of theater-based instruction in their classrooms was included. This fourth set of videos served as an exemplar form of creative engagement in tableaux vivant with middle and high school students. That fourth set of videos was created with authentic students and teachers, who had experienced the strategy already, and were guided by an expert facilitator (see Table 1 for descriptions of each class). For those exemplar videos, students had been selected by teachers because of their willingness and interest to participate. Those videos were designed and edited to serve as demonstration videos of warm-up exercises and tableaux in action, for use in future trainings. Importantly, the training videos were only used for comparative purposes in the quantitative analysis.

Table 1
The sample of arts integration units selected for analysis.

Artistic Discipline	Grade Level and Unit Titles
Tableaux Vivants	<ul style="list-style-type: none"> • Tableaux vivants and theater warm-ups demonstration • Grade 6 science: Density, volume, and buoyancy • Grade 7 social studies: History, culture, religion, and agriculture of West African nations • Grade 10 health class: The plague and chicken pox

2.3.2. Video transcription procedure

First, the research assistant listened to and watched the drama videos in order to transcribe them. Second, each tableaux was described with attention to props and non-verbal movement. Third, for each video segment, we were careful to fully decompose each tableaux vivants scene in order to capture the richness of multi-modal expression. Fourth, verbal exchanges were transcribed in these segments, as well as the use of gestures by each individual and across the small groups. Finally, at each step, the research assistant met with one of the lead researchers to discuss the transcription and coding procedure.

2.3.3. Coding procedure

Qualitative analytical procedures were used to partition the video content into indicators and codes (Strauss, 1987). We wanted to decompose each episode or instance of tableaux to account for the full range of verbal and bodily gestures. Instead of deriving codes inductively, we used the codes relating to the four creative engagement indicators that we had identified in a previous phase of the research (*creative resources, autonomy, belonging and competency*; see Table 2 for expanded definitions). The codes from the creative engagement framework and related indicators were proposed in Anderson (2018) and described in Anderson et al., (2019a,b). For this study, we elaborated on those indicators based on research and practice in drama-based pedagogy (Dawson and Lee, 2018) Coding included isolating each instance of each code to its smallest unit (Lincoln and Guba, 1985). We made sure that each instance of the creative engagement indicators was represented by a code (supporting the principle of “exhaustion”) and that each code was mutually exclusive (Merriam, 2009). Then, within each code such as “freedom to move and use body,” we compared each instance of a code to other instances to ensure they were similar (Merriam, 2009). Patterns of each code were reviewed within each video segment.

2.3.4. Validity and reliability

To ensure that the codes were credible and accurate, and consistently applied to the transcribed segments, we practiced a number of ways to ensure validity and reliability. First, the research assistant presented each stage of coding to the other research team members. The codes were then

Table 2
Creative engagement indicators and codes.

Indicator	Code
Creative resources	Use of the body as a sensorial and artistic medium for exploration, affective meaning, and expression; risk-taking; metaphorical thinking; musical development; harmony; original thinking; flexible thinking; risk-taking; deep observation; visual literacy; aesthetic awareness; novel idea-generation; acknowledging complexities; open-mindedness; resourcefulness with found materials and spaces
Autonomy	Freedom to move and use the body to make meaning in the learning process; responsiveness; choice in learning that is culturally meaningful; opportunity for self-expression; ownership in work; choice of media and process; and exhibition of unique process and intent
Belonging	Sense of inclusion in classroom learning community; relationship development with peers; shared vulnerability through performance; contributing to group harmony; community building through collaborative creation; development of empathy; sharing music and arts from students' cultures; collaborative design and production; sharing/exhibiting work to validate work and receive feedback for improvement; shared vulnerability in expression and reflection
Competency	Confidence for public speaking and performance; empathetic listening; deep understanding of and ability to apply content; development of habits of mind; active listening skills; being socially adept; attentive to friends and family; metaphorical thinking, visualization, elaboration, metacognition, communication, emotional awareness in learning, hand-eye motor skills, and using and improvising with tools

discussed, and language was modified to provide clarity. This process helped to establish adequate engagement (Merriam, 2009) in the data collection and analysis, thereby ensuring the authenticity of meaning of the video data. We could not engage in respondent verification or “member checks” as the students we videotaped were minors and could not be contacted beyond the initial round of data collection. However, we did discuss the video coding procedure with the teaching artist. He reviewed the codes and gave feedback. Peer examination of codes across the research team and the use of an audit trail (Lincoln and Guba, 1985) to provide careful record keeping of the coding process were two ways we established reliability in the study.

2.5. Quantitative analysis

Quantitative analysis of the same set of videos allowed us to compare the creative engagement indicators (see Table 2) more precisely across the classes (6th grade science, 7th grade social studies, and 10th grade health). In addition, we coded the training videos, which provided exemplar enactment of tableaux, as an additional comparison to the authentic classrooms.

2.4.1. Coding procedure

Quantitative content analysis (Altheide and Schneider, 2012) was used to identify creative engagement indicators used in the videos. The indicators (see Table 2) were used identify observable instances of creative engagement in the tableaux in 21 videos.

First, we used a type of intensity coding (Salanda, coding dictionary book) to code the demonstration videos using a Likert scale (0 = no evidence, 1 = minimal evidence, 2 = moderate evidence, 3 = strong evidence) to ensure the indicators were clear and could be consistently coded by two researchers. Then, each individual classroom was coded (6th grade science, 7th grade social studies, and 10th grade health) by dividing each classroom into the subgroups of students performing and/or presenting (eight 6th grade groups, three 7th grade groups, three 10th grade groups). These small groups were individually examined for the prevalence of each indicator. The video was viewed multiple times to understand the context. Interpersonal interactions, movements, gestures, and facial expressions were coded using the creative engagement framework using the Likert scale. For example, if students repeatedly looked to each other to cue synchronized changes in tableaux movements, they were given a rating of 3 in Collaborative Design and Production under *Belonging*. Next, videos were viewed a third time to code for language and dialogue between students, between the student and teaching artist. The prevalence of these instances were then rated using the Likert scale. For example, if a group presented confidently and comfortably in front of their peers, evidencing a deep understanding in the material without relying on slides or notes, this group was given a rating of 3 in Confidence in Public Speaking under *Competence*. If groups showed adeptness in the usage and combination of action and language i.e. gesturing with speech, this reflected in the finalized rating of the code. Then, codes within each small group for each indicator were summed. Finally, these sums were averaged and compared across classes using non-parametric tests of analysis of variance.

2.4.2. Analytic plan

Before running analyses to compare creative engagement across multiple classes, analyses were run to test the assumption of normality and equal variances, and inter-rater reliability of raters. The intraclass correlation coefficient measures the dependency between ratings scored by two coders. Two coders reached moderate reliability with an intraclass coefficient of (3, 2) = 0.53 with a 95% C.I. = 0.46, 0.60. Raters met twice to clarify different interpretations about the codes before coding and then met again after coding to add additional clarity. One researcher coded the classroom videos using the revised coding schema (see Appendix for coding schema). Results of the Shapiro-Wilk and Levene test are reported in the results. The Kruskal-Wallis test (Kruskal and Wallis,

1952) was used to test the assumption that the groups come from different populations, which was followed up with pairwise comparisons. The Kruskal-Wallis test served as a non-parametric analysis of variance to test differences in creative engagement in each of the four classes.

3. Results

The qualitative results addressed the research question about the mechanisms of how creative engagement was enacted and reinforced across all of classes (classrooms) and instances of tableaux. Two central themes emerged: autonomous gesture as precipitative learning mechanism (characterizing learning at the individual level) and shared vulnerability in teamwork (signifying learning at the group level). Quantitative results addressed cross-class comparison and revealed differences for autonomy and competency. Qualitative then quantitative results are discussed.

3.1. Qualitative theme 1: gesture as precipitative learning mechanism

In isolating each instance of behavior, it was clear that individual learning started with a simple gesture and then grew from there. As the first cross-cutting theme, we noticed how each student's gesture, a specific body movement, served as gateway to expression of thought in student learning. In this way, gesture was a central recurring theme during the tableaux across the classes. Gesture was a precipitating learning medium in that it preceded and seemed to accelerate the development of thought during tableaux. Gesture also precipitated other aspects of creative engagement such as a more complex articulation of concepts being taught. In this way, gesture helped to spawn not only theatrical acting, but verbal understandings and verbal exchanges between students. There were several instances of students employing gesture to understand abstract concepts and communicate their conceptual understanding. Each gesture preceded a verbally expressed thought in the tableaux (see Fig. 1).

As the students used their bodies to move and make gestures, their sense of autonomy, ownership and creative self-expression became evident. Autonomy set the requisite condition for confidence in public speaking as well as the demonstration of understanding of content. In

return, students were observed as feeling relaxed in the classroom when participating in tableaux and acting supportively of one another. These conditions helped to build a sense of inclusivity which was central to a positive classroom experience (see Fig. 2).

The following example shows how students used gesture to act out different learning concepts and then respond to and engage each other while learning in the classroom. In these examples of tableaux, students were particularly expressive. Students spontaneously chose which props, such as clothing, tools or furniture to include in their acting. In the tableaux below, the three students improvised by working closely together to build on each other's gestural movements. The description of the tableaux is italicized, and the verbal exchanges are in quotes:

Eleanor's eyes widen and she moves to lie on the ground using the jacket as a pillow. Amina puts a hand on her right ear and looks away from the audience. Amina closely points at Sri's shoulder with a pencil. (A ding.) Sri open his eyes and looks out towards the audience. He moves his jacket from the floor to his hands. He is now balancing in a runner's lunge holding the jacket in his right hand, hovering in front of him. He smiles. Amina gestures upwards and off screen. (A ding.) Amina moves her hair behind her ears and backs away from the center. Eleanor crosses in front of Sri on the ground to stand in a line. Sri balls up his jacket. Eleanor looks up, remembering something. She gestures with her right hand by pointing.

Eleanor: "Mass is unchanging weight." Amina looks down, then up then at Eleanor. Amina: "Unlike weight, mass is unaffected by gravity."

Amina looks towards Sri who puts his jacket back on and adjusts it while he speaks and puts his hands in his pockets.

Sri: "To measure mass, um (looking up), we use weights to balance the scale. (looking down and to his left) so that even on different planets or the moon with different weights, it's either subtracting or adding the same amount of weight from the balance on all planets."

Sri then makes a weighing gesture with his hands. He adjusts his jacket. (A ding signally time to change to another tableaux.) Sri then removes his jacket and moves back down and lies on the ground. Amina smiles and looks down at him. Reciprocity was demonstrated when students observed each others' gestures, and then responded with a gesture they thought was appropriate. The ebb and flow of gesturing reinforced teamwork in the classroom. Eleanor crosses in front of Amina and lands on her left and brings her right hand to her ear. (Potentially gesturing a phone) (A ding). Eleanor moves to raise her left hand above her head and moves to stand on her toes. Amina raises the pencil and points it to the ceiling of the classroom. She is looking down and smiling. (A ding). Sri gets up from off the ground, smiling, and puts his jacket back on. The three students return to their seats. (Applause from the audience).

3.2. Qualitative theme 2: shared vulnerability in teamwork

The first cross-cutting theme addressed how creative engagement is enacted through autonomous gesture, and the second theme addresses how creative engagement is reinforced. This theme examines how individual students worked together to learn at the group level. In particular, students' shared vulnerability lay the foundation for student teamwork. Students developed relationships with each other during the acting process that allowed them to be vulnerable by relying on each other, taking risks, presenting new ideas and supporting each other to become confident in public speaking.

As these qualities of teamwork developed, there was a marked level of positive affect. Several groups showed signs of being particularly comfortable with each other. As they acted, they contributed to a sense of group harmony in the classroom. Students helped each other from time to time and joked around, but not to the detriment of paying attention to the teaching artist. If one student became distracted, or mispronounced a word, other students would playfully get that student's attention. Or, if a student was struggling with standing in front of other students, they

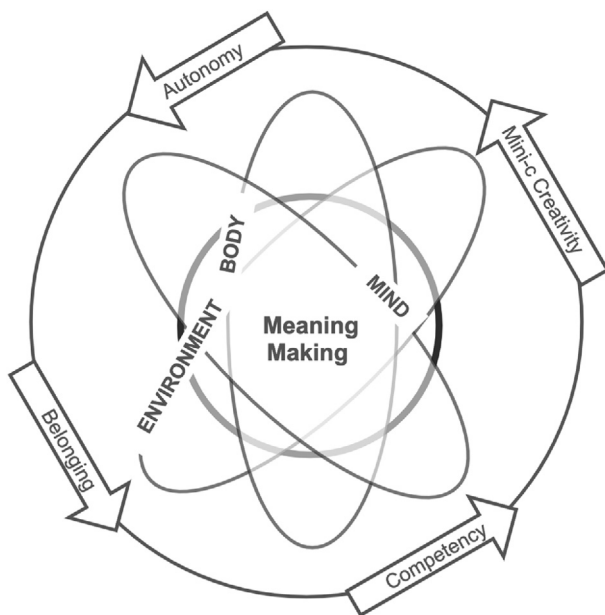


Fig. 1. A model of creative engagement linking theories of mini-c creativity, engagement in learning, affective neuroscience, and embodied philosophy of mind to inform the design and analysis of drama-based integrated learning (Adapted with permission from Anonymus, 2018b).



Fig. 2. A photo of students and their teaching artist frozen in tableaux vivants in response to the prompt “How can you use math to protect yourself from natural disaster?” Example codes observed include Freedom to Move & Use Body (Autonomy) and Confidence in Performance (Competency).

would receive help from their peers. For example, in one classroom, a student, Amalie, was nervously looking to the side, her body was shaking and her speech was stuttering in anticipation of speaking in front of others. Another student, Dane, asked if he could help her present and she nodded her head. Amalie remained cautious in front of her peers, but the other students encouraged her to participate, “C’mon. Turn around.” Amalie ended up turning around and completing the tableaux.

This example shows how students quickly re-formed their tableaux scenes without much disruption or distraction. Instead of making fun of each other or instead of the tableaux dissolving, students helped each other in times of vulnerability and even slight distress. On the whole, the students exchanged ideas and insights and interpretations during the creative process which led to a sense of group creativity. Reciprocal exchange of ideas was an important indicator that students made the effort to understand the perspective and experiences of one another.

Uma stands with her hands in front of her and adjusts her clothes as she speaks. Nadine and Seth look at her.

Uma: “Freezing and melting is a physical attained matter. (*She tosses her hair.*) It changes from one state to another and back again.” *She looks to Nadine.*

Nadine: “Molecules in frozen things move fast and have more - no move slow and have less energy. Molecules in melting things move fast and have more energy.

They both look to Seth, who puts his hands on the table behind him.

Seth: “Um, melting - um - ice cubes - um - melt into water and (his voice quiets) and um - immediately form a physical connection.”

Seth and Uma laugh and look at each other. Seth touches Uma’s arm. (A ding.) Uma points at the ground and hops on the backs of Seth and Nadine to form a human pyramid. (A ding). They lower slowly to the ground. The tower begins to lose stability. (A quick ding.) Uma falls to the ground and laughs. The other two move to the ground as well.

That example illustrates the shared experience of vulnerability and enjoyment in performing in front of the class, including receiving the validation of an applause. The concluding prompt of the facilitating teaching artist illustrates the expectation that all student groups will share their work.

3.3. Quantitative results of cross-class comparisons

Quantitative results indicated creative resources and belonging were more prevalent components than autonomy and competency consistently across classes. When comparing the classes, creative resources and belonging did not differ in prevalence between classes at a statistically significant level. In contrast, autonomy and competency were more prevalent at a statistically significant level in the two classes—Grade 10 health class and the exemplar theater class—compared to the science class and social studies class, in general. That finding indicates a potential difference explained by students age, content area, or an interaction of both.

Prior to responding to Research Question 2, we tested assumptions about the distribution of the data, specifically tests for homogeneity of variances and for normality and found both assumptions to be violated. The Levene Test for homogeneity of variances was statistically significant for creative resources and belonging but not for autonomy and competency. The Shapiro-Wilk test of normality was statistically significant for

Table 3
Descriptive results of components and indicators across classes and classroom instances.

Classes	Classroom Instances	Creative Resources	Autonomy	Belonging	Competency
Science Grade 6	8	18.75a (2.25)	13.00a (1.31)	20.88a (1.64)	10.75a (1.49)
Social studies Grade 7	3	17.00a (1.00)	14.33a (1.16)	21.00a (2.00)	15.33a,b (2.89)
Health Grade 10	4	22.00a (5.35)	19.00b (2.00)	22.75a (0.96)	21.50c (2.08)
Theater Mixed grades	6	24.33a (5.96)	16.50a,b (3.21)	22.50a (1.87)	18.50b,c (3.56)
Average	21	20.71 (4.79)	15.33 (3.06)	21.71 (1.77)	15.67 (4.93)

Note. Post hoc pairwise comparisons between trajectory groups used the Bonferroni adjustment (0.05/# of comparison) to maintain $p < .05$. Outcome values with different subscripts are significantly different at adjusted $p < .05$.

four of the 16 classes. Those results indicated that the assumptions of normality and homogeneity of variance were violated, which provided further support for using a non-parametric test of analysis of variance, such as the Kruskal-Wallis test. Next, we pursued Research Question 2 to determine which creative engagement dimension was most prevalent across four classes and found that differences existed between classes. The descriptive results in Table 3 indicates the most prevalent components on average across class were creative resources ($M = 20.71, SD = 4.79$) and belonging ($M = 21.71, SD = 1.77$) compared to autonomy ($M = 15.33, SD = 3.05$) and competency ($M = 15.67, SD = 4.93$). The descriptive results illustrated that statistically significant differences between classes may exist for some components, especially autonomy and competency.

As a follow-up, we responded to Research Question 2-a to determine how classes in authentic classroom settings compared with one another and an exemplar instructional training scenario. Whereas, in the area of autonomy, there was no difference between science and theater or between science and social studies classes, in the area of competency, science was statistically significantly lower than the health and theater classes and social studies was lower than health. In our statistical tests, the omnibus Kruskal-Wallis test revealed a statistically significant test for autonomy $H(3) = 12.00, p < .01$ and competency $H(3) = 15.47, p < 0.01$ and a statistically non-significant test for creative resources $H(3) = 5.21, p > .05$ and belonging $H(3) = 4.53, p > .05$. That result suggested that the distribution of observable levels of creative resources and belonging did not differ between the classes, including the exemplar theater demonstrations of tableaux. However, the distribution of autonomy and competency did differ across classes, requiring pairwise comparisons to identify which classes differed. To conduct all pairwise comparisons, the Bonferroni adjustment was used to maintain a p -value of .05 for tests of statistical significance. Statistically significant differences between groups were labeled in Table 3 with subscripts, where classes that do not share a subscript demonstrated a statistically significant difference. As can be seen in Table 3, only the health class was statistically significantly different from the social studies and science classes in the area of autonomy; there was no difference between science and theater or between science and social studies. For competency, science was statistically significantly lower than the health and theater classes and social studies was lower than health. There was no difference between science and social studies, social studies and theater, and theater and health.

In our final step for quantitative analysis, we responded to Research Question 2-b to determine the most salient indicators across classes for each component. In the classrooms, the most salient indicators for each component were somewhat consistent. For creative resources, the most salient indicator for two of the classes was “use of body as a sensorial/artistic medium” and for one class it was “open-mindedness”. For autonomy, “choice of media and process” and “exhibition of unique process and intent” were the common top indicators for two classes. One class included “responsiveness” as a top indicator and another included “freedom to use and move body”. For belonging, all three classes included “collaborative design/production” and “shared vulnerability through performance” as most salient indicators. Two classes also included “sharing/exhibiting work to validate work/improvement” and “shared vulnerability in expression and reflection”. For competency, “confidence for public speaking/performance”, “deep understanding of and application of content”, and “metaphorical thinking and visualization” were each top indicators for two classes each.

4. Data integration and discussion

Data integration involved analyzing the results from the quantitative and qualitative data separately and then merging them so that a comparison could be made through a joint display (as represented in Table 4). The process of data integration helped to generate a more complex understanding than if the data were interpreted independently. In this

Table 4
Joint display: Qualitative mechanisms and quantitative prevalence of creative engagement.

Classes	Classroom Instances	Creative Engagement			Autonomy			Belonging			Competency		
		Qualitative Mechanisms	Quantitative Prevalence	Qualitative Mechanisms	Quantitative Prevalence	Qualitative Mechanisms	Quantitative Prevalence	Qualitative Mechanisms	Quantitative Prevalence	Qualitative Mechanisms	Quantitative Prevalence		
Science Grade 6	8	Inventing new ways to use body as form of creative self-expression.	Use of body as sensorial medium (3 classes) and open-mindedness (1 class).	Use of classroom space to move freely. Spontaneous self-expression. Being responsive to others.	Choice of media and process and exhibition of unique process and intent (2 classes). Responsive-ness (1 class). Freedom to use and move body (1 class).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Gaining confidence in public speaking in front of peers and teachers. Articulation of content knowledge. Increased use of props incorporated into tableaux.	Confidence for public speaking and performance, deeper understanding of and application of content and metaphorical thinking and visualization (2 classes each).		
Social studies Grade 7	3	As form of creative self-expression. Taking risks and being open-minded. Using props in new ways.	Use of body as sensorial medium (3 classes) and open-mindedness (1 class).	Spontaneous self-expression. Being responsive to others. Initiating and helping without being prompted from teacher or peer. Contributing individual novel ideas.	Choice of media and process and exhibition of unique process and intent (2 classes). Responsive-ness (1 class). Freedom to use and move body (1 class).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Gaining confidence in public speaking in front of peers and teachers. Articulation of content knowledge. Increased use of props incorporated into tableaux.	Confidence for public speaking and performance, deeper understanding of and application of content and metaphorical thinking and visualization (2 classes each).		
Health Grade 10	4	As form of creative self-expression. Taking risks and being open-minded. Using props in new ways.	Use of body as sensorial medium (3 classes) and open-mindedness (1 class).	Spontaneous self-expression. Being responsive to others. Initiating and helping without being prompted from teacher or peer. Contributing individual novel ideas.	Choice of media and process and exhibition of unique process and intent (2 classes). Responsive-ness (1 class). Freedom to use and move body (1 class).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Gaining confidence in public speaking in front of peers and teachers. Articulation of content knowledge. Increased use of props incorporated into tableaux.	Confidence for public speaking and performance, deeper understanding of and application of content and metaphorical thinking and visualization (2 classes each).		
Theater Mixed Grades	6	As form of creative self-expression. Taking risks and being open-minded. Using props in new ways.	Use of body as sensorial medium (3 classes) and open-mindedness (1 class).	Spontaneous self-expression. Being responsive to others. Initiating and helping without being prompted from teacher or peer. Contributing individual novel ideas.	Choice of media and process and exhibition of unique process and intent (2 classes). Responsive-ness (1 class). Freedom to use and move body (1 class).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Gaining confidence in public speaking in front of peers and teachers. Articulation of content knowledge. Increased use of props incorporated into tableaux.	Confidence for public speaking and performance, deeper understanding of and application of content and metaphorical thinking and visualization (2 classes each).		
Total	21	As form of creative self-expression. Taking risks and being open-minded. Using props in new ways.	Use of body as sensorial medium (3 classes) and open-mindedness (1 class).	Spontaneous self-expression. Being responsive to others. Initiating and helping without being prompted from teacher or peer. Contributing individual novel ideas.	Choice of media and process and exhibition of unique process and intent (2 classes). Responsive-ness (1 class). Freedom to use and move body (1 class).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Develop relationship with peers. Establishing trust. Being attentive to one another. Reacting and being responsive to gestures. Refraining from deriding peers. Helping peers when nervous or having trouble presenting. Sharing vulnerability. Building teamwork and collaboration.	Collaborative design and production and shared vulnerability through performance (3 classes). Sharing and exhibiting work to validate and improve and shared vulnerability in expression and reflection (2 classes).	Gaining confidence in public speaking in front of peers and teachers. Articulation of content knowledge. Increased use of props incorporated into tableaux.	Confidence for public speaking and performance, deeper understanding of and application of content and metaphorical thinking and visualization (2 classes each).		

Note. Qualitative descriptions derived from the two cross-cutting themes presented in the qualitative results. Quantitative indicators were selected that received the highest observation frequency across classes.

section, we discuss the comparison of the results and then describe our resulting, more complete understanding of how creative engagement was enacted *individually*, and reinforced *collectively*. Lastly, we discuss how creative engagement differed across the classes. Our discussion is compared to prior research to demonstrate how we have extended it.

4.1. Comparison of qualitative and quantitative results

Most mixed methods studies using a data transformation approach to convergent designs choose to represent qualitative codes as dichotomous variables indicating the absence (0) or presence (1) of a code (Creswell and Plano Clark, 2018). However, we chose to go a step further and analyze the *strength* of the presence of the codes by using a Likert scale of 0 (absence) to 1 (minimal prevalence (of creative engagement)), 2 (moderate prevalence), or 3 (strong prevalence). Examining the strength of the presence of the codes helps enhance the validity, or accuracy, by indicating the nuances of how creative engagement varied. Table 4 provides a joint display of the qualitative and quantitative representation of area of creative engagement. For each creative engagement indicator, a description is pulled from each cross-cutting theme that coordinates with the most frequently observed quantitative indicators reported in the results. Jick (1979) recommends pointing out similarities and comparisons across data as well as possible explanations for differences and divergences. As can be seen, the most saturated themes and frequent indicators align well. Resulting themes from the qualitative analysis added important detail to how students' shared vulnerability resulted in emotional support during and after performing and the inventive ways that students used props to enhance their gestural expression of meaning. Additionally, results from quantitative analysis highlighted the development and use of metaphor to describe abstract concepts as a key competency to creative engagement in drama-based integration.

4.2. Reciprocating features of individual enactment and group level reinforcement

This study shows how the tableaux vivants theatre technique allows for individual learning but requires small group-level interaction and feedback (2–3 students or more) for authentic creative engagement. The cross-cutting theme of autonomous gesture as precipitative learning mechanism occurred across all the classes of tableaux, but depended on an intimate level of reinforcement by students in pairs, triads or even larger groups of students. The qualitative transcription, coding and thematic writing process unearthed insight into the association of the body with speech. That is, multiple gestures preceded the articulation of content knowledge.

This order of gesture preceding speech and ideation indicates a chronology, or order of operations, unique to the process of doing tableaux in the creative learning process. The use of gesture as a learning modality has rich potential in learning to provide more equitable access to newcomer students learning English (Porter et al., 2018) and in understanding abstract concepts in math and other subjects (Cook, Mitchell and Goldin-Meadow, 2009). The use of the body as a learning medium to making meaning of and represent concepts has a strong theoretical foundation in cognition, psychology, and neuroscience (Anderson, 2018). For adolescents in the sociocultural setting of a classroom, opportunities for expression and exchange are paramount (Anonymous, 2019b).

The enactment and reinforcement of creative engagement seemed richest when there was a combination of both cross-cutting themes: Autonomous gesture as precipitative learning mechanism needed to be reinforced by the second theme of reciprocity and shared vulnerability in teamwork. When individual students make gestures and act individually in isolation, they might be able to exhibit autonomy and have free range of body movement and possibly demonstrate competency of learning material. However, they would not receive the feedback from team members to confirm a sense of belonging and provide additional material

for improvisation. These three components—a sense of autonomy, relatedness and competency (Ryan and Deci, 2000; Fredericks, Blumenfeld & Paris, 2004)—are essential features of authentic creative engagement for drama-based instruction in the classroom. Tableaux illustrates a potentially powerful tool for the development of strong collaboration skills for adolescents.

These skills will not only be demanded across the high school curriculum, but also in professional settings in the future.

This study showed that group level feedback in drama-based pedagogy appears to take several possibly beneficial forms: peer feedback, teaching artist feedback and larger class feedback. Social feedback is critical for individual learning. Receiving feedback can be daunting for some students as demonstrated in one of the videos where a student was visibly nervous and stuttering. Peer support illustrates how problems encountered at the individual level can be addressed and solved in a supportive peer context: another student noticed the peer's nervousness and stepped in to intervene, volunteering to help that student present. Therefore, in this example, the ability to compensate for learning problems in competency is adequately confronted through peer mentoring and learning. Indeed, past research demonstrated how the negative emotions of fear and nervousness experienced in drama-based classroom learning experiences was common for students and complemented by strong positive emotions of enjoyment, pride, and camaraderie after performing (Anderson and Beard, 2018). To conclude, this study shows how individual enactment and group level feedback are reciprocating features of successful creative engagement in drama-based tableaux instruction.

4.3. Differences in creative engagement across instructional classes

According to quantitative results, creative engagement differed across the four instructional classes represented in the videos. There are several possible interpretations for these quantitative results. One explanation could be a result of the class of the Health class containing Grade 10 students, whereas Science and Social Studies classes were from Grades 6 and 7, respectively. There could be a developmental explanation for the difference observed for autonomy and competency. The early adolescent students may need more structure and guidance than their later adolescent peers. Younger students exhibiting less autonomy might have less experience with drama and less confidence using gesture and presenting in public.

The developmental explanation is further supported by the fact that the observation ratings for competency increased progressively from Grade 6 to Grade 10. This finding supports the theoretical argument that creative engagement should be carefully scaffolded with students' developmental needs considered. Interestingly, the observed expression of belonging and creative resources were not different across classes at a statistically significant level. Though students may engage creative resources and a sense of belonging in similar ways in drama-based integration across middle and high school grades, the autonomy and competency should be considered within a developmental framework, such as the *Developmental Frameworks* developed for essential skills, such as self-direction, communication, creativity, and collaboration (Lench et al., 2015).

A second explanation could be a result of differences in the curricular content. The learning content in the health class may have been more conducive to some aspects of creative engagement in tableaux integration than science and social studies. In the class of science, the level of abstraction in the concepts students portrayed could require more guidance from an adult and cognitive sophistication to transform into embodied metaphor and represent as a group in tableaux. The content in social studies and science may have also required mastery of a wider range of historical and scientific information to create a meaningful and accurate tableaux.

Integrating tableaux into a specific content area may require thoughtful scaffolding from the concrete to abstract, as others have

suggested (Anderson and Beard, 2018).

For autonomy, belonging, and competency, the observed creative engagement in the authentic classroom context health class trended to be highest. Even though the training videos provided exemplary demonstrations, the authentic engagement of students constructing and performing tableaux resonated high across components. That findings points to the potential for creative engagement in tableaux to reach the developmental needs of adolescent learners—autonomy to approach learning their way and the develop of relationships that reinforce acceptance and unique expression, simultaneously. Both the qualitative and quantitative results indicate integration of tableaux provides opportunities for using the body as a means for creative expression and precipitative learning mechanism and for developing shared vulnerability and trusting relationships with peers consistently across middle and high school classes.

4.4. Limitations

This study is limited to purposively selected instances of arts-integration across various grades and schools in one state. As such, the number of teachers and students is constrained, thus highlighting an in-depth examination as opposed to a broad or wide-ranging representation of drama-based arts integration. As a result, the sample is not meant to be generalizable to learning at a larger scale with respect to drama-based arts integration. Rather, the interpretation of the tableaux is much like class study research in education that highlights a unique method of instruction that is not offered in most public or private schools. The small sample of instances within each class limited the statistical tests of differences in observations. However, the inherent richness of the detailed quantitative analysis shows the differences across the classes and the thematic analysis of the drama-based pedagogy emphasizes learning at the individual student level that reinforces group work.

4.5. Conclusion

Results from our mixed methods approach revealed important insights about how students' creative engagement in learning takes place at the micro-level of gestural and verbal interactions and expression and how creative engagement compares across different age levels and classroom contexts. In summary, this mixed methods convergent study generated insight to advance how video can be transformed into two separate sets of data that highlight separate but complimentary ways of interpreting human behavior—in this class, drama-based instruction. In this study, the qualitative data provided an interpretive understanding of the developmental aspects of drama-based learning at the individual student level as well as how teamwork unfolds at the dyadic and small-group levels. The quantitative data provided distinct comparisons across the four instructional classes in terms of the intensity of creative engagement factors in the areas of observable expressions of autonomy, belonging, creative resources, and competency. On a practical level, these distinctions will help inform the design of drama-based arts integration with educators new to the practice, aiming to implement the use of tableaux in their schools in a new federal grant-based project. At a theoretical level, this study highlights the importance of meaning-making through the body for diverse youth to engage in learning and the developmental nature of autonomy and competency.

Results from this study also advance the SDT framework (Ryan and Deci, 2000), to include culturally-situated, multimodal, creative meaning-making as a fundamental condition to engagement in learning. Consistent with SDT theory, this study shows how personally meaningful and productive learning requires autonomous motivation, and SDT suggests that autonomous motivation depends on a universal set of specific “social and cultural nutrients”—the fundamental needs of autonomy, relatedness and belonging, and competency (Ryan & Deci, 2017, p. 4). Considering this needs-based framework hierarchy, belonging and creative resources could be considered necessary before other needs, such as

autonomy and competency, are sought out and fulfilled. Conceptually, the creative engagement framework (Anderson, 2018) builds from embodied, emergentist philosophy of mind to suggest a need for meaning-making is a higher order need that undergirds and drives others needs. By its nature, the construction of meaning is a creative process for an individual and collaborative process when learning is social and integrative. Results suggest embodied, gestural modalities of learning may facilitate the need for belonging and creative meaning-making—an important consideration to make SDT more culturally relevant for students from non-dominant racial, ethnic, cultural, and language groups.

From a culturally-responsive and equity-driven lens to rigorous, quality learning (Windschitl and Barton, 2016) the use of the body serves some students from non-dominant cultural backgrounds as a key sense-making mechanism, tapping into funds of knowledge that may be less accessible in other modalities. Results from this study suggest opportunities for autonomous use of the body and gesture in learning may be essential for culturally responsive and inclusive practice. This study highlights the interdependent nature of the need for belonging, relatedness, and creative meaning-making within the sociocultural contexts of diverse schools.

One implication of this study for theatre-based intergration specialists and educators is to further develop competency in younger adolescent students through working collaboratively with classroom teachers and devoting additional time with younger student groups to practice tableaux and build their competence. A testable hypothesis is that as students develop, their competency in drama-based instruction becomes more expressive, but this might be moderated by level and type of content knowledge. As well, the promotion of teamwork and shared vulnerability can lead to increased levels of gesture and speech leading to greater competency.

Psychologists can use drama-based instruction in many different settings to foster therapeutic, clinical or other educational means. For example, children with Autism Spectrum Disorder (ASD), who may have challenges engaging socially, may benefit from using drama-integrated therapies within clinical or educational settings to build creative and communication skills. Drama-based instruction has the potential to provide the structure for children with ASD to create collaboratively and think abstractly on a physical and verbal level (Kempe and Tissot, 2012). Additionally, some therapists have begun to integrate art therapy approaches into established group therapy protocol, such as dialectic behavior therapy, to link metaphor and the creative process with mindfulness training (Clark, 2015). Integrating tableaux through the creative engagement framework in group therapy settings could enhance shared vulnerability and processing. Future research and practice can pursue those ideas using similar mixed methods approaches.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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